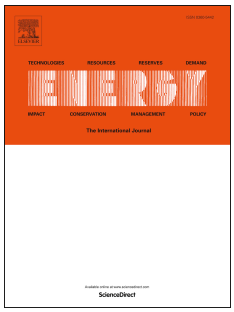
Accepted Manuscript



Bifunctional MOF-derived Co-N-doped carbon electrocatalysts for high-performance zinc-air batteries and MFCs

Jie-Cheng Li, Xiao-Tong Wu, Li-Jun Chen, Nan Li, Zhao-Qing Liu

PII: S0360-5442(18)30916-2

DOI: 10.1016/j.energy.2018.05.096

Reference: EGY 12931

To appear in: *Energy*

Received Date: 12 December 2017

Revised Date: 7 May 2018

Accepted Date: 13 May 2018

Please cite this article as: Li J-C, Wu X-T, Chen L-J, Li N, Liu Z-Q, Bifunctional MOF-derived Co-N-doped carbon electrocatalysts for high-performance zinc-air batteries and MFCs, *Energy* (2018), doi: 10.1016/j.energy.2018.05.096.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Bifunctional MOF-derived Co-N-doped carbon electrocatalysts for high-performance zinc-air batteries and MFCs

Jie-Cheng Li [a], Xiao-Tong Wu [a], Li-Jun Chen [a], Nan Li*, [a], Zhao-Qing Liu*, [a]

[a]School of Chemistry and Chemical Engineering/Key Laboratory for Water Quality and Conservation of the Pearl River Delta, Ministry of Education, Guangzhou University, Guangzhou 510006, China.

Abstract: High cost and vulnerable stability of noble metal catalysts are the main barriers to develop the sustainable clean energy conversion and storage technology. In this work, a novel Co species/N-doped carbon (Co-N-C) derived from ZIF-67 has been designed and successfully prepared by a simple and feasible process. The ORR activities of the obtained Co-N-C with different contents of cobalt species were systematically investigated and clearly elucidated. Notably, the Co-N-C cathode exhibits a high onset-potential -0.12 V (vs. SCE) and long-tern stability in alkaline situation. Furthermore, the self-assembled Zn-air battery and microbial fuel cells (MFCs) devices coupled with Co-N-C cathode also achieve superior open-circuit potentials (Zn-air: 1.40 V, MFC: 0.45 V) and high power densities (Zn-air: 102.3 mW m^{-2}, MFC: 399.7 ± 10 mW m^{-2}).

***Keywords*:** Metal-organic framework, Co-N-C, Oxygen reduction reaction, Microbial fuel cell, Zn-air battery.

Download English Version:

https://daneshyari.com/en/article/8071321

Download Persian Version:

https://daneshyari.com/article/8071321

Daneshyari.com